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of Patients who had Percutaneous Transluminal Coronary  
Angioplasty without Myocardial Infarction into Phase II  
Cardiac Rehabilitation Programs

by Maureen A. Koch

Captain Maureen A. Koch

USAF

1996

Thesis: 66 pages

Degree: Master of Nursing

University of Washington - Seattle

## Abstract

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by Maureen A. Koch

Chairperson of the Supervisory Committee:

Professor Susanna Cunningham,  
School of Nursing

The benefits of cardiac rehabilitation (CR) have been demonstrated repeatedly. Little is known about the benefits percutaneous transluminal coronary angioplasty (PTCA) patients without myocardial infarction (MI) achieve due to their limited enrollment in CR programs. The purpose of this study was to describe the experiences program directors encountered during the enrollment of patients who have had PTCA without MI into their outpatient CR programs.

A 19 item survey was developed. Program directors from the Northwest Association of Cardiovascular and Pulmonary Rehabilitation responded (39%). The study revealed 52% (N=16) provided Phase I CR programs, while 84% (N=27) provided Phase II/III CR to PTCA patients.

Programs had existed for an average of 8 years, and had accepted PTCA patients for an average of 7 years. Marketing of programs to physicians providing PTCA occurred in 74% (N=20) of programs, but only an average of 15 PTCA patients per year, out of an average yearly



total of 298 PTCA procedures, were enrolled in Phase II/III CR.

The program directors indicated physicians and CR staff identified patients for referral most often. Few physicians referred their patients prior to PTCA. Program directors felt resistance to PTCA patient enrollment existed in 56% (N=15) of their programs. Physicians and patients were most frequently identified as resistant. The most common alternative for patients not in CR was physician follow-up.

Multiple variables affect the referral of PTCA patients without MI into CR programs. Attitudes and beliefs of program directors, physicians, patients, and other providers are important. Efforts to increase the enrollment of PTCA patients into CR programs will require multi-disciplinary approaches and collaboration among all involved.

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Angioplasty without Myocardial Infarction into Phase II  
Outpatient Cardiac Rehabilitation Programs

by

Maureen A. Koch

A thesis submitted in partial fulfillment  
of the requirements for the degree of

Master of Nursing

University of Washington

1996

Approved by: \_\_\_\_\_  
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A 19 item survey was developed using a literature review, the investigator's knowledge of CR, and an expert panel of nurses specializing in CR. The format of the survey was based on the demographics of CR programs, referral processes, and alternatives existing in place of CR. The survey was mailed to 85 members of the Northwest Association of Cardiovascular and Pulmonary Rehabilitation. Program directors were asked to respond. The response rate was 39% (N=33). The study revealed

Phase I CR programs were provided to PTCA patients in 52% (N=16) of programs, while Phase II/III CR was provided in 84% (N=27) of programs.

Responding program directors indicated their programs had existed for an average of 8 years, and they had seen PTCA patients for an average of 7 years. Marketing of their programs to physicians providing PTCA occurred in 74% (N=20) of programs, but only an average of 15 PTCA patients per year, out of an average yearly total of 298 PTCA procedures, were enrolled in Phase II/III CR. First time PTCA patients comprised 77% of this population.

The program directors indicated physicians and CR staff identified patients for referral most often, followed by self referrals, nurses, and CNS's. Few physicians referred their patients prior to a PTCA, but directors felt 91% did so after the procedure. Program directors felt resistance to PTCA patient enrollment existed in 56% (N=15) of their programs. Physicians and patients were most frequently identified as resistant. The most common alternative identified for patients not enrolling in CR was physician follow-up. Home exercise programs, health promotion programs, CNS follow-up via telephone, or case managers were rated much lower.

Multiple variables affect the referral of PTCA patients without MI into CR programs. Attitudes and



beliefs of not only the program directors, but of physicians, patients, and other health care providers are important. Efforts to increase the enrollment of PTCA patients into CR programs will require multidisciplinary approaches and collaboration among all involved.

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## DEDICATION

This thesis is dedicated to my husband, Mark. This endeavor is made possible because of his love, patience, understanding, and hours of technical support.

## Chapter I

### Problem Statement

The purpose of this study was to describe the experiences Program Directors of cardiac rehabilitation (CR) programs encountered when enrolling patients who have had percutaneous transluminal coronary angioplasty (PTCA) without myocardial infarction (MI) into their outpatient CR programs. Percutaneous transluminal coronary angioplasty is a widely used intervention in the treatment of coronary heart disease (CHD). The literature suggested that until 1988, PTCA patients were not frequently offered enrollment into outpatient CR programs. Their access was controlled by the referral process. Hotta (1991) received comments from the National Institute of Health, American Medical Association, and American Association of Cardiovascular and Pulmonary Rehabilitation that indicated little information was available concerning the effects of CR on patients who had PTCA, transplant, or heart valve surgery. For this study, program directors in the Northwestern United States were surveyed regarding the experiences they have encountered while enrolling PTCA patients into their programs.

### Significance

With the improved diagnosis of CHD, the number of PTCAs performed annually has increased, along with the



increased acuity of the condition of the patients undergoing the procedure. Over 250,000 PTCAs are performed annually on patients with CHD (AHA, 1994), yet only 11-20% of eligible patients enroll in CR (Wenger et al., 1995). Eligible patients also included those with MI, coronary artery bypass graft (CABG) surgery, heart failure, and stable angina patients (Wittels, Hay, & Gotto, 1990). The low number of eligible patients attending CR was distressing, because CR programs enable patients who attend to return to their former lifestyle and work sooner compared to those who do not attend (Hotta, 1991). Many PTCA patients meet the criteria for enrollment in CR programs.

Traditional CR programs following MI generally consist of 36 sessions and cost from \$1350 to \$2160. Total expenses, including physician visits and hospital readmissions, over a 12-month period resulted in a cost savings for PTCA patients enrolled in CR of \$2600 (Edwards et al., 1993). Of the 468,000 coronary revascularization procedures done each year, the associated costs will exceed \$56 billion in 1994. Lost productivity accounts for 14% of this cost (AHA, 1994). Cardiac rehabilitation is standard care and should be offered to all patients with CHD, including those undergoing PTCA.

## Chapter II

### Conceptual Framework

The following areas will be addressed in this chapter: a discussion of the background on exercise training, risk factor education, and program outcomes. The chapter concludes with a statement of the study's purpose.

### Background

Cardiac rehabilitation (CR) programs have evolved over the past 40 years to encompass most cardiac patients. The goal of CR is to provide patients and families with appropriate information and skills, to regain as soon as possible, an active and productive life by their own efforts (Oldridge, 1992). Phase II programs are generally 12-weeks long for an MI patient and consist of exercise training, risk-factor education, and psychosocial interventions. The outcomes for CR programs include lowered numbers of all cause deaths, cardiovascular mortality, and nonfatal reinfarctions (Oldridge et al., 1988).

### Exercise Training

The emphasis on physical reconditioning began when prolonged bedrest was prescribed following a cardiac event. By the 1970s, preserving left-ventricular function was the focus of medical management. The

introduction of CABG, PTCA, and thrombolytic therapies improved overall outcomes, and hospital stays decreased dramatically (McNeer et al., 1978).

"The field of CR has been slow to adapt to these revolutionary trends in management... enhancement of the functional capacity remains the focus... despite evidence that smoking cessation or diet-drug management...exert a much more powerful effect on prognosis (DeBusk, p.285, 1993).

Cardiac rehabilitation. The success of CABG, PTCA, and thrombolytic therapy procedures have provided a large population of patients eligible for CR. Patients experiencing an MI, CABG surgery, or PTCA today, typically receive inpatient CR (Phase I). The inpatient length of stay varies from 3-10 days following an MI or CABG. These patients' activity progression is supervised and structured.

Within a few days to three weeks after discharge, outpatient CR (Phase II) is started. Activity levels are increased as the patient progresses on an individual basis. Phase II lasts an average of 12 weeks with attendance at sessions two-to-three times a week. Rhythm monitoring is generally used for the first six sessions (Ritchie & Sivarajan Froelicher, 1995). The length of time a patient is monitored is based on their level of risk stratification (AHA, 1995).

During Phase III of CR, patients attend an extended, supervised outpatient program. It can last from three-

to-six months based on individual patient needs. Phase IV is the maintenance phase lasting an indefinite length of time. This phase is autonomous and unsupervised (Ritchie & Sivarajan Froelicher, 1995). Cardiac rehabilitation programs are shifting their focus from physical reconditioning to health promotion and prevention of future cardiac events.

Primary prevention. Numerous epidemiologic, longitudinal studies have concluded inactivity is a major determinant in the presentation of cardiovascular disease. Physical activity and exercise play a key role in the primary prevention of heart disease. The Framingham Heart Study (Kannel & Sorlie, 1979), the Seven Countries Coronary Artery Disease Study (Blackburn, 1983), and the Lipid Research Clinic Trial (Ekelund et al., 1988) showed physical inactivity was an independent predictor of cardiovascular disease. Berlin & Colditz's (1990) meta-analysis showed the relative risk of death from CHD in sedentary individuals was 1.9 with a 95% confidence interval of 1.6-2.2.

Paffenbarger and coworkers (1993) analyzed the association of lifestyle changes with mortality between 1977 and 1985. In 1977, men between the ages of 47 and 84 years were classified according to changes in lifestyle characteristics between the first and second

questionnaires. Of the 10,269 men, those engaging in a moderately vigorous sports activity using 4.5 metabolic equivalents (mets) or more reduced mortality by 23% with a 95% confidence interval of 4-42%.

Secondary prevention. Studies of exercise in the secondary prevention of cardiac events have shown trends suggesting beneficial effects. The relationship was not as strong as that shown for primary prevention. Levine & Balady (1993) identified the benefits of exercise in normal healthy persons as: a lower resting heart rate (10-20 beats per minute) and blood pressure (10 millimeters mercury {mm Hg}) while at rest or with any workload placed on the heart, an increased stroke volume (25%), increased coronary artery size, increased high-density lipoprotein (HDL) levels, decreased serum triglyceride and fasting glucose levels, decreased blood catecholamines after exercise, and enhancement of the fibrinolytic system.

The benefits of exercise contribute to the secondary prevention of cardiac events. Lavie, Milani, & Littman (1993) observed these benefits in elderly patients receiving CR and exercise training. Ninety two patients older than 65 years decreased body-mass index (BMI) by 1.5%, body fat by 6%, low-density lipoprotein (LDL) by 8% and improved exercise capacity by 34%, and increased HDL

by 6%. All improvements were almost identical in a younger group.

#### Risk Factor Education

Cardiac rehabilitation programs provide education on controlling modifiable risk factors. The actual courses are individualized to patient requirements. The major areas addressed include nutritional counseling, smoking cessation, and psychosocial needs (Levy, 1993). Healthy behaviors are introduced, molded, and reinforced in a supportive environment. Percutaneous transluminal coronary angioplasty patients with modifiable risk factors, poor exercise capacity, heart failure, or recent or previous MI can benefit from risk factor modification.

Nutritional modifications. Significant amounts of evidence exist showing the improvement patients with CHD made in their plasma lipid profiles by decreasing dietary fat intake, initiating exercise, and using drug therapy as prescribed. The Lipid Research Clinics Coronary Primary Prevention Trial (1984) showed a 19% reduction in CHD in men who took cholestyramine. Their total cholesterol and LDL levels were significantly reduced by 8% and 12% respectively ( $p < .001$ ). A 2% decrease in CHD risk was also seen with small increases in HDL levels.

Patients with known CHD also benefited from lipid reduction. Treasure and coworkers (1995) studied the

effect lovastatin had on endothelium mediated responses in a double-blind, placebo-controlled trial of 23 patients. The 11 patients in the lovastatin group and the 12 patients in the control group were also put on lipid-lowering diets. While undergoing PTCA, patients' coronary arteries were measured 12 days and 5 1/2 months after randomization. Injections of four different concentrations of acetylcholine were made into minimally obstructed arteries. No injections were made into the vessel undergoing angioplasty. The endothelial mediated response, as measured by the change in vessel diameter, was significantly improved in the lovastatin group ( $p=.004$ ). No true baseline data were available, since PTCA was not performed until day 12.

Percutaneous transluminal coronary angioplasty patients enrolled in CR programs achieved similar benefits to the men enrolled in the Lipid Research Clinics Coronary Primary Prevention Trial. Ben Ari and coworkers (1989) studied 60 patients enrolled in CR who had PTCA and 68 patients receiving usual physician care who had PTCA. After six months, the CR group did significantly better in cholesterol control (211 mg/dl vs. 222 mg/dl), HDL levels (61 mg/dl vs. 48 mg/dl), LDL levels (117 mg/dl vs. 128 mg/dl; all  $p<.01$ ), and HDL/Cholesterol ratio (3.4 vs. 4.6;  $p<.001$ ).

Smoking cessation. Patients who quit smoking have lower risks of cardiac events occurring after they stop. Rosenberg, Kaufman, Helmrach, & Sharpiro (1983) showed this effect in men 55 years and younger. A total of 1873 men with their first MI were compared with 2775 controls. For men smoking in the previous year, their relative risk of MI was 2.9. Ex-smokers who had quit one year or more before the study dropped their risk to 2.0. This value fell close to 1.0 after abstinence for two or more years. Quitting smoking is an effective measure to prevent repeat MI. Hermonson and coworkers (1988) obtained similar data in women.

The subsequent risk of a cardiac event was lowered in patients who had PTCA by preventing restenosis. Galan, Deligonul, Kern, Chaitman, & Vandormael (1988) found that restenosis was higher in smokers (55%) compared to nonsmokers (38%). Their retrospective design did not allow for control of any other factors.

Cardiac rehabilitation programs influence patients' decisions to stop smoking. Fletcher (1986) studied the effects inpatient CR had on smoking-cessation following PTCA. Thirty patients completed a telephone questionnaire six months after their discharge, and reported a 60% smoking-cessation rate. Most smoking-cessation treatments obtain a cessation rate of 10%-40%



at one year (Taylor, Houston-Miller, Killen, & DeBusk, 1990). Fletcher's six-month follow up interval may have been too short to obtain accurate cessation rates. In order to maintain a 60% rate, relapse training within a CR program would be beneficial since physiological and psychological mechanisms would be addressed.

Psychosocial interventions. Psychological problems frequently occur in patients with CHD. Moderate-to-severe depression occurs in 10%-20% of patients after MI (Taylor, DeBusk, Davidson, Houston, & Burnett, 1981). Dixhoorn, Duivenvoorden, Staal, Pool, & Verhage (1987) addressed anxiety in patients after MI by using relaxation therapy and exercise on post-MI patients. Forty two patients were randomly assigned to a program consisting of exercise training and relaxation therapy, while 46 patients received only exercise training. Baseline characteristics were similar in both groups. The occurrence of a cardiac event (cardiac death, hospitalization for angina pectoris, CABG, or repeat MI) were compared. The group receiving relaxation therapy experienced a 17% reoccurrence rate while the exercise only group had a rate of 37%. The reoccurrence rate was statistically significant ( $p=.05$ ). This study supported the theory that behavioral treatment along with exercise was more beneficial to coronary patients than exercise

alone.

Patients who have undergone PTCA have not been widely studied regarding the effects anxiety may have on their outcomes. Anxiety plays a role in sexual activity in patients with CHD. Gaw & Laing (1994) studied the extent of risk factor reduction behavior before and after PTCA. They compared these patients to MI patients who had data collected through personal interviews instead of by mailed questionnaires. Of 210 PTCA patients, 53% reported sexual activity was the most restricted activity compared to 5% of the MI patients. This study suggested MI patients may be better prepared to resume previous lifestyle activities.

In a small qualitative study, Gaw (1992) interviewed 14 PTCA patients to identify their concerns and perspectives prior to the procedure. She reported less than 50% of patients undergoing PTCA seemed to have the motivation to make lifestyle changes or showed an interest in reducing their cardiac risk factors.

#### Program Outcomes

Morbidity/Mortality. Regular physical activity decreases long-term cardiovascular mortality. Patients enrolled in CR experience a survival benefit. Oldridge, Guyatt, Fischer, & Rimm (1988) performed a meta-analysis on the use of CR following MI. Their pooled results on

2145 control patients and 2202 CR patients showed a decreased cardiovascular mortality and an all-cause death ratio of .75 (95% confidence interval .62-.93) for mortality and .76 (95% confidence interval .63-.92) for an all-cause death ratio. This 25% risk reduction was significant ( $p=.006$  and  $p=.004$ ). Their meta-analysis was useful since most studies on CR efficacy had small numbers and high drop-out rates. Unfortunately, this reduction was not found to carry over to the prevention of a repeat MI. Cardiac rehabilitation programs provided an ideal environment for supervision of behavior change and early detection of restenosis or other cardiac events. Patients who have undergone PTCA could also experience a survival benefit through enrollment in a CR program.

Functional capacity/Return to work. A criticism of CR programs has been that most patients would condition themselves to adequate levels without a program. Ben-Ari and coworkers (1989) showed PTCA patients gained functional capacity to resume their normal activities without supervised CR programs, but patients in a CR program increased their functional capacity by a greater

Age and illness severity affect functional capacity. Despite a high procedural success rate, return to work after PTCA rates remain low. Danchin and coworkers

(1989) reported the changing demographics of PTCA patients. Patients in 1980-1982 were younger (46.4 years) with a low incidence of previous MI and a return to work rate of 73%. By 1985, PTCA patients were older (49.9 years), had a higher percentage of previous MI and multi-vessel disease, and their return to work rate dropped to 64%.

Ben-Ari and coworkers (1992) studied the return to work rate of 80 PTCA patients receiving CR and 92 patients receiving usual physician care. Of those patients working full time before PTCA who enrolled in CR, only 11% of patients did not return to work, while 23% of the physician-care group did not return within 18 months. At 18 months, 37% of the CR group and 52% of the physician group had quit working altogether. Their sample was nonrandomized, but the better return-to-work rate for CR patients suggested a benefit from CR.

Cost effectiveness. Cardiac rehabilitation programs are beneficial for patient outcomes as well as being cost effective. The recent inclusion of PTCA patients into CR programs allows cost comparisons to be made with MI and CABG patients. Ades, Huang, & Weaver (1992) measured the effect of CR by monitoring hospital costs for cardiac admissions over three years following CABG surgery or MI. Left-ventricular function was similar in both groups, but

those participating in CR had charges \$739 less than nonparticipants. Differences in risk factors were adjusted for statistically. Physician costs were not included in the total costs calculated.

These results compare favorably with the savings enjoyed by PTCA patients enrolled in CR programs. Edwards and coworkers (1993) retrospectively determined cost effectiveness of CR programs in 47 patients with successful PTCA with no contraindications to enrollment in CR. Nineteen received CR with counseling, but no exercise rehabilitation, while 28 received CR or a home-walking program with counseling. Patients self-selected themselves into these treatment groups. After comparing costs for discharge medications, cardiac related readmissions, and cardiac related outpatient visits, patients performing exercise had \$905 fewer expenses than those not exercising at six months. At 12 months, the expense was \$2600 less for those exercising. The cost savings realized were only for those patients with uncomplicated courses and did not address any savings beyond the 12-month time point.

#### Referral Trends

The effectiveness of CR for cardiac patients is well documented. Risk-factor modification leads to improved quality of life and decreased mortality rates. These

facts support the need for enrollment of PTCA patients into CR programs. Often, PTCA patients are not as debilitated as MI or CABG surgery patients. By utilizing risk stratification and individualization of program content, the outcomes can be the same.

Physicians often control the referral of patients into CR programs. Their knowledge of CR programs influences their patients' utilization of these programs. Suter, Bona, & Suter (1992) surveyed Arkansas physicians on their CR beliefs. A phone survey of CR programs in Arkansas was also done, and found no programs were functioning at 100% capacity, with half functioning at or below 60% capacity. There was a wide gap between the potential 5595 patients and the actual 716 patients served. The physicians surveyed stated they did not order CR because 47% believed insurance would not cover CR, 40% felt patients lacked the motivation to attend, and 30% felt the CR staff was unqualified. None believed smoking cessation or weight-loss counseling was available.

The pattern of under utilization can be improved by improved communication between programs directors (most often CR nurses and exercise physiologists), and physicians. Further understanding of the experiences involved in the enrollment of patients who have had PTCA

was required to implement effective changes. The referral of patients who had PTCA to CR programs could improve their outcomes. The proposed study provides information for all health professionals to gain an appreciation of the process involved in obtaining this standard care.

#### **Purpose**

The purpose of this study was to describe the experiences program directors encountered during the enrollment of patients who have had PTCA without MI into their outpatient CR programs.

## Chapter III

### Methods

#### Design

A non-experimental, descriptive study design was used to describe the referral practices seen by CR program directors. A descriptive design was appropriate since it documents situations as they occur in present practice. There are many factors affecting the CR referral process for patients who had PTCA. This study design allowed one arm of the referral process to be better understood, and allowed further delineation of the variables involved in the referral process.

#### Sample

Cardiac rehabilitation program directors in the Northwestern United States were surveyed for the study. The unit of analysis was the outpatient CR program. The sample selection process was non-probability convenience sampling using the Northwest Association of Cardiovascular and Pulmonary Rehabilitation Membership List. As of December, 1993, 85 members were enrolled in this region. All members were sent questionnaires and were asked to return them if they were a program director. Inclusion criteria for the sample were programs that provided services to PTCA patients and offered phase II or phase III outpatient CR programs.



### **Measures**

Data were collected by using an investigator-designed questionnaire (Appendix A). Questions were constructed to obtain referral practices seen by program directors. Demographic information was also obtained to better describe the outpatient programs responding.

The questionnaire was tested for content validity through the use of an expert panel consisting of three cardiovascular nurses with expertise in CR (Appendix B). The review form was provided (Appendix C). The questions were judged based on the clarity of questions, appropriateness of response alternatives, and relevance to the study purpose.

A pilot test of the questionnaire in three outpatient CR programs outside of the Northwestern United States was performed after approval from the Department of Physiological Nursing's Human Subjects Committee was received. These program directors were also sent forms to evaluate the questions on clarity, relevance, and inclusiveness. Comments and recommendations from both the expert panel and CR program directors were used to revise and finalize the questionnaire.

### **Procedures**

After ensuring content validity through the expert panel, the investigator-designed questionnaire was

submitted to the Department of Physiological Nursing's Human Subjects Committee for review in June, 1995. Upon approval, a pilot study of three CR programs outside of the Northwest United States was conducted. Based on the data obtained, the questionnaires was further modified as necessary.

The final questionnaire and a cover letter (Appendix D) was sent by first class mail to all of the members listed in the Northwest Association of Cardiovascular and Pulmonary Rehabilitation Membership List in late September. The CR program directors received the surveys and provided the data regarding PTCA patient referral practices they had seen. A follow-up post card encouraging participation was mailed out three weeks after the initial mailing (Appendix E).

### **Analysis**

Data from the questionnaires were entered into the computer for a computerized analysis organized by question number using SPSS for Windows. Demographic data from the programs was characterized by means, modes, standard deviations, minimum and maximum values, percentages, or ranges. Each individual question was described according to the responses to each question and the response rate of participants to each question. Those questions yielding interval data were described by

central tendency, means, modes, and percentages. .

### **Protection of Human Subjects**

The rights of human subjects were protected by obtaining an exempt review from the University of Washington's Human Subjects Committee. Participation in the study was strictly voluntary. Returning the completed questionnaire was evidence of the participants' consent to participate. The identity of each individual CR program director was anonymous and a separate postcard was used for participants to request a copy of the results (Appendix F). The only risk to the participants was the time involved in completing the questionnaire. The questionnaire was designed to take no longer than 20-30 minutes of the participants' time. Through their participation, program directors could gain an understanding of concerns other programs have and referral practices they have seen.

## CHAPTER IV

### Results

The purpose of this study was to describe the experiences of CR program directors when enrolling into their CR programs patients who have had PTCA but not MI. Specific content areas of the questionnaire included demographic data, the referral process, and options for PTCA patients not receiving CR. The 19-item questionnaire was mailed to 85 members of the Northwest Association of Cardiovascular and Pulmonary Rehabilitation. Members who were program directors were asked to complete the questionnaire. Thirty four questionnaires were returned, including one blank. Five of the programs responding were not accepting or seeing PTCA patients without MI in their phase II or III CR programs, leaving 28 program directors responding to items three through 12. The final response rate was 33 out of 85, or 39% of the total population surveyed. The following chapter presents the results of the study followed by a discussion of the results.

### Demographic Data

Demographic data elicited to describe the CR programs included number of years as a CR program, number of PTCA procedures done at the hospital or hospitals served in 1994, the total number of phase II or III CR

patients seen in 1994, the total number of CR patients who underwent PTCA in 1994, and the year PTCA patients were first accepted into their CR programs. The number of years program directors had been a CR professional and the presence of a marketing program were also identified.

There were 16 out of 31 programs (52%) seeing PTCA patients in Phase I CR, while 27 out of 32 programs (84%) were seeing PTCA patients in Phase II or III CR programs. A large range existed in the population regarding the number of years in existence as a CR program. One year was the minimum and 26 years was the maximum. The mean was  $8.4 \pm 5.4$  years, with a mode of 10 years. The number of PTCA procedures performed at the hospitals served in 1994 ranged from zero to 1802 procedures. The mean number of procedures was  $298 \pm 511$ , with a median of 121. No mode was identified. Only 6 (40%) of 15 CR programs provided certified versus estimated data. Certified data were defined as written or computerized data available to define the CR program and patients.

Figure 1 displays data regarding the total number of phase II or phase III CR patients enrolled for 1994. The range was from 24 participants to 400 participants. Two programs submitted total number of patient visits. Their numbers were divided by 36, the usual number of sessions in a CR program. The mean number of participants was 127

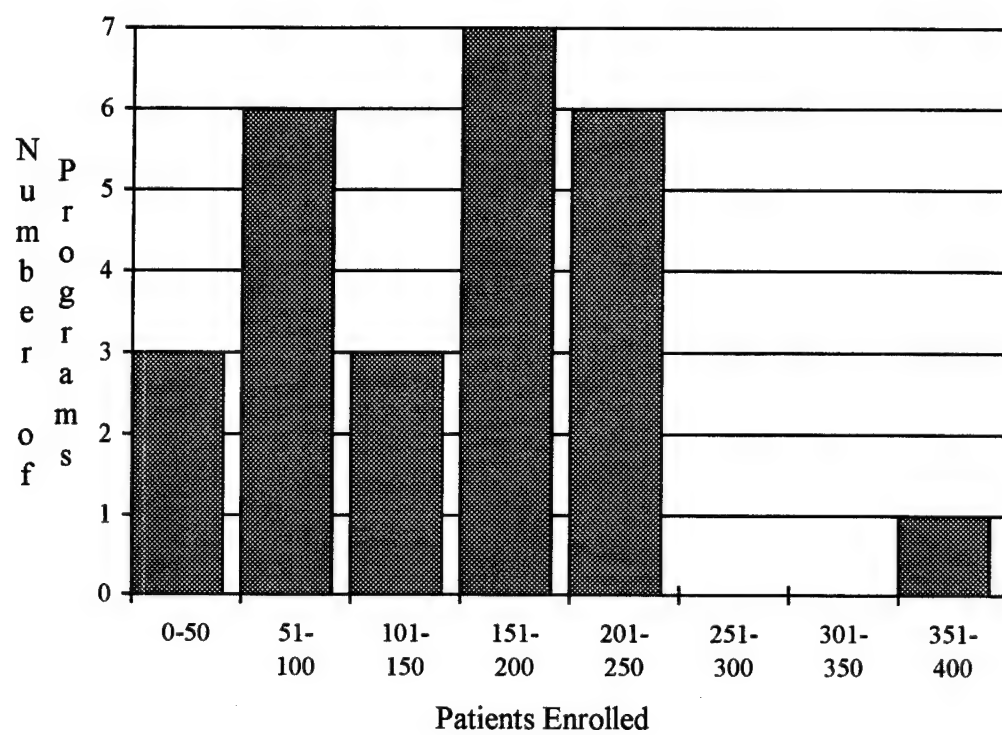


FIGURE 1: Total Patients Enrolled in CR in 94

+/- 88 with a median of 133 and mode of 50.

Figure 2 illustrates the total number of patients who had received PTCA in 1994 and attended CR. The range was from one participant to 70 participants. The mean number of participants was 15 +/- 17.1 with a median of 11 and mode of one participant.

Programs who accepted PTCA patients who had not experienced an MI into their programs were asked how long this practice had been done. The range was from one year to 16 years as shown in Figure 3. The mean number of years was 7.4 +/- 3.8 with a median of 8 and mode of 3 years.

The program directors responding to the questionnaire were asked to identify the number of years they had been CR professionals. Out of 33 returned questionnaires, 29 (85%) responded. The range of experience was from one year to 19 years. The mean number of years was 8.9 +/- 4.8 with a median and mode of 10 years.

The marketing of CR programs was also addressed. Marketing was provided by 20 (74%) of 27 program directors to physicians providing PTCA in the area. Sixty percent of respondents discussed how or why marketing took place. The majority of comments stated marketing was in place, but it was not "formal" due to

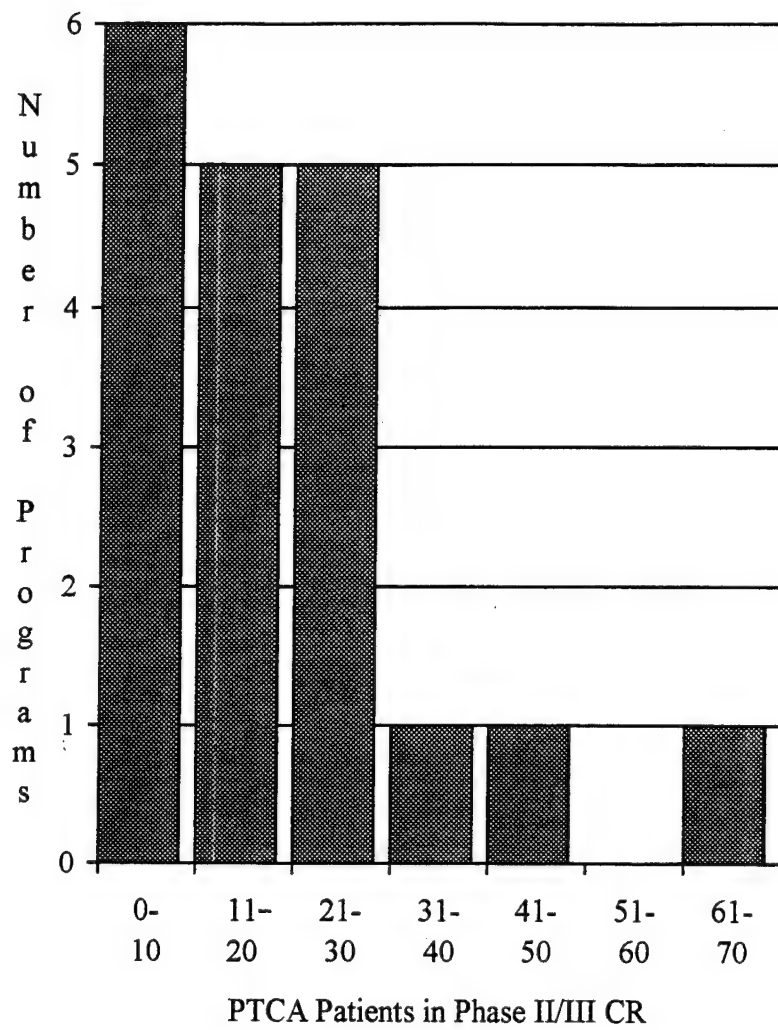


FIGURE 2: PTCA Patients Enrolled in CR in 94





FIGURE 3: Years CR Offered to PTCA Patients

lack of funding. Word of mouth and networking were the primary types of marketing identified. The focus of networking was with physician groups referring to their programs. In the opinion of the directors, the length of their program's existence and its reputation with the physician groups influenced the program's utilization more than marketing.

### **Referral Process**

The current referral patterns in place at CR centers were described through questions about the referral process. Physicians ultimately must write a referral for CR, but the identification of PTCA patients as potential candidates for CR occurs through various health care professionals. The 27 program directors responding from programs with PTCA patients being seen in phase II or III CR were asked to identify from a list, individuals they felt referred PTCA patients into CR. Table 1 displays their response rate to each individual choice: CR staff and physicians 26 (96%), self referral 20 (74%), staff nurses 18 (67%), and Clinical Nurse Specialists nine (33%). A discharge planner was also listed by two programs as an identifier of program candidates. Additionally, CR staff members saw PTCA patients without MI prior to discharge from the hospital in 17 (71%) of 24 programs.

TABLE 1: Groups Identifying Cardiac Rehabilitation Participants

<b>Groups of Professionals</b>	<b>Directors Indicating Group out of 27</b>	<b>Percentages</b>
Physicians	26	96%
CR Staff	26	96%
Self Referrals	20	74%
Staff Nurses	18	67%
Clinical Nurse Specialists	9	33%
Other Identifiers of CR Patients	2	7%

Program directors responded that the referral of elective PTCA patients by a physician prior to the procedure occurred in only five (19%) of the 26 programs. If patients were not referred prior to their PTCA, the referral occurred within 24 hours for three (14%) of 21 programs. The referral was felt to occur more than 24 hours later in 20 (91%) of 22 programs. It was not noted whether all patients receiving a PTCA were referred.

Resistance to the enrollment of PTCA patients without MI was also reviewed. Resistance to patient enrollment was identified by 15 (56%) of the 27 responding programs. Program directors were again asked to identify from a list of individuals those who they felt resisted the enrollment of PTCA patients into CR programs. Table 2 shows how often they identified each choice: patients and physicians 13 (87%), nursing staff and family members one (7%), and insurance companies 9 (60%) of the time. There was one other influence not specifically identified.

Program directors who worked with physicians who did refer PTCA patients who had not experienced an MI into CR programs felt physicians were able to individualize their prescriptions. A standard protocol was used in just five (19%) of the 27 programs taking PTCA referrals. Individualization of the protocols was seen in 19 (70%)

TABLE 2: Health Professionals Displaying Resistance to PTCA  
Cardiac Rehabilitation Enrollment

<b>Resistors</b>	<b>Directors Indicating Resistor out of 15</b>	<b>Percentages</b>
Physicians	13	87%
Patients	13	87%
Insurance Companies	9	60%
Nursing Staff	1	7%
Family Members	1	7%
Other Resistors	1	7%

of the 27 programs. The program was individualized by CR staff for PTCA patients in two (6%) of the 27 programs. Physician approval was obtained for these changes.

The criteria used to enroll patients who had PTCA without MI in CR programs versus patients who had experienced an MI or CABG differed in only 3 (12%) of the 26 programs. The majority of programs 23 (89%) of 26 used the same criteria for PTCA patients as they did for MI or CABG patients. One program stated all CABG patients had to go through Phase II CR before they could enroll in Phase III CR. The severity of muscle damage in their MI patients dictated the individualization of the protocols for these patients. The directors felt PTCA patients could conceivably begin in Phase III CR or would advance more quickly through Phase II CR than MI or CABG patients.

In 26 programs, 15 (58%) of the program directors felt patients who began CR after their PTCA started their program one week or less after their hospital discharges. Initiation of CR for patients greater than one week, but in less than two weeks since their discharge was identified by nine (35%) directors. Only three (12%) of the directors felt patients waited more than two weeks, but less than four weeks to begin. A wait of more than four weeks was identified by only one director (4%).

Other time intervals between discharge and program initiation accounted for three (12%) of program directors responses, but no specific time intervals were identified by them.

### **Alternatives to Cardiac Rehabilitation**

Several of the responding directors worked in CR programs where patients were already enrolled in CR for various reasons when they underwent PTCA. Three of these programs were excluded from the calculations as percentages of their patients enrolled in CR at the time of PTCA were provided, not the actual numbers as requested. The average number of patients enrolled in CR at the time of their PTCA was  $8.3 \pm 8.7$  per program. The median number of patients was 5.5 with a mode of 2.0. The range was from two to 30 patients. Of the 11 programs with patients enrolled prior to their PTCA, eight (73%) had these patients continue in their CR program after the PTCA. The mean number of patients continuing was  $7.8 \pm 5.6$ . The median was 5.5 with a mode of 5.0. The number of patients continuing ranged from a minimum of 2 to a maximum of 20.

Figure 4 summarizes the mean number of PTCA procedures patients enrolled in CR had undergone. A mean of  $77\% \pm 18\%$  of patients enrolled in CR had undergone their first PTCA. Patients enrolled in CR and who

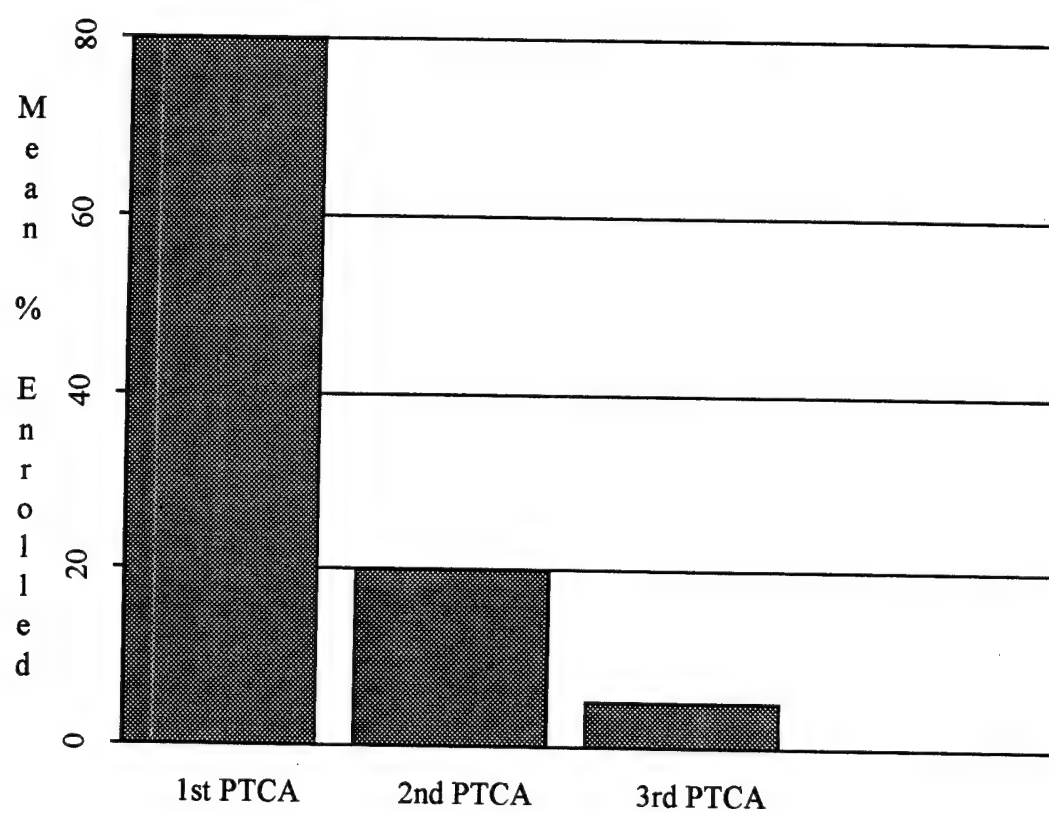


FIGURE 4: Types of PTCA Patients in CR



underwent a second PTCA represented a mean of 18% +/- 15% of the population. Those who underwent three PTCA's represented only 4% +/- 7% of the CR enrollees.

Not all patients are able to enroll in a CR program or have one available to them for enrollment. The alternatives that program directors identified as existing for these patients are listed in Table 3. Program directors were asked to identify from a list what alternatives were available in place of CR after discharge. In the opinion of 31 program directors, the following alternatives were cited: follow up with a physician 28 (90%), providing patients with a home exercise program and telephone follow-up 11 (36%), enrollment in a health promotion program and follow up with a CNS via the telephone seven (23%), and a case manager two (7%). Other alternatives, identified by three (10%) of respondents, included: follow up phone calls from the CR staff, the use of a home health nurse, and the use of community based exercise programs.

#### **General Comments**

Directors responding to the survey were given the opportunity to provide their comments about PTCA patients in CR programs that were not addressed by the questionnaire. A few programs commented they were unaware that PTCA was a reimbursable diagnosis by

TABLE 3: Alternatives Available in Place of Cardiac Rehabilitation

<b>Available Alternatives</b>	<b>Directors Indicating Alternative out of 31</b>	<b>Percentages</b>
Physician Follow-Up	28	90%
Home Exercise Program	11	36%
Health Promotion Program	7	23%
Telephone with a CNS	7	23%
Case Manager	2	7%
Other Alternatives	3	10%

insurance companies. One stated insurance would not cover the diagnosis of PTCA, but they would cover the diagnosis of angina for CR. A majority of comments addressed the fact PTCA patients were discharged and returned to work so quickly. Several programs had expanded their operating hours and were offering evening heart education classes to accommodate these patients. One program director wrote, "It has been my experience that many PTCA's somehow get the idea that they've been "fixed" or "cured" of their heart problem and do not realize the progressive nature of CAD. If they come to our orientation, most of them sign up for CR Phase II". One director commented PTCA patients do not have time to deal with their denial in the recovery process and a lot of insecurity about restenosis exists. Finally, one program director summed up the importance of CR for PTCA patients without MI succinctly. "I feel this is a very important time to educate and help change risk factors-before damage occurs."

## CHAPTER V

### Discussion

The benefits of CR for CAD patients has been demonstrated repeatedly. Mortality is markedly reduced (Oldridge et al., 1988). These benefits may extend to patients who have undergone PTCA, but have not experienced MI. Little was known about the benefits these patients achieve due to their limited enrollment in CR programs. Most CR studies have focused on MI or CABG patients, leaving out a large population of patients who have undergone PTCA. This study attempted to describe the nature of existing CR programs in the Northwest and how existing PTCA patients without MI were recruited and treated within the CR system.

### Summary of Results

To describe program directors' experiences with the enrollment of PTCA patients without MI into their programs, a 19 item instrument was developed. Program directors (52%) indicated PTCA patients were seen in Phase I CR, while 84% saw them in Phase II or III CR. Average program existence (8 years) did not differ markedly from the average (7 years) PTCA patients had been seen. Marketing to physicians providing PTCA occurred in 74% of their programs, yet only an average of 15 PTCA patients were enrolled in Phase II or III CR in

1994, despite an average of 298 PTCA procedures in 1994. A mean of 77% of all PTCA patients enrolled in CR had their first PTCA.

Twenty seven program directors rated the extent they felt health professionals referred PTCA recipients. Physicians and CR staff were identified by 96%, self referrals by 74%, staff nurses by 67%, and a CNS by 33% of the program directors. When physicians referred their PTCA patients to CR, directors felt only 19% referred them prior to the PTCA, while 91% felt this occurred 24 hours after the procedure.

Resistance to enrolling PTCA patients was identified by 56% of the program directors. Of 15 program directors, 87% felt physicians and patients displayed the highest resistance to enrolling PTCA patients into CR with insurance companies at 60%. Directors felt PTCA patients enrollment in CR occurred within one (58%) to two weeks (35%) of discharge.

Several alternatives exist for patients unable to attend a CR program. Program directors rated a list of options available in place of CR. Directors identified the physician follow up at 90%. The remaining alternatives of home exercise or health promotion programs, CNS follow up via telephone, and case managers fell below 40%.

### **Comparison of Study Results to Related Literature**

As cited in Chapter II, CR programs are shifting their focus from physical reconditioning to health promotion and prevention of future cardiac events (AHA, 1995). The Agency for Health Care Policy and Research (AHCPR) states Americans with heart disease should enroll in special CR programs to live longer and better lives, yet less than a third get that help. New CR guidelines from AHCPR tell patients to seek rehabilitation and doctors to get better at prescribing it (Wenger et al., 1995).

#### **Enrollment of PTCA Patients in CR**

Hotta (1994) addressed the lack of literature addressing the enrollment of PTCA patients without MI into CR programs. Lavie & Milani (1994) found that the benefits of CR and exercise training in patients with preserved exercise capacity, like patients having PTCA without MI, is supported by improvements in their risk factor profiles. The data obtained from the program directors indicated 84% of directors responding stated they enrolled PTCA patients into Phase II CR. The CR programs had existed for a mean of eight years, while PTCA patients had been accepted for seven years. These figures were surprisingly close and indicate PTCA patients are being enrolled in CR programs, but the

literature was not reflective of this trend.

The numbers of PTCA patients enrolled is still small, leaving a large number of the available population unenrolled. The survey indicated the mean number of PTCA procedures, performed at the hospitals CR programs served, was 298, but only 15 were enrolled in CR. This represents 5% of the eligible PTCA population from this survey, a number less than the national enrollment rate of 11-20% for eligible patients (Wenger et al., 1995).

#### Resistance

The surveyed program directors indicated resistance was a problem in 15 of 27 (56%) of programs. The improvement of this rate for the PTCA population needs to be addressed.

Physicians. Physicians were identified as being resistant to the referral of patients after PTCA by 87% of these directors. Ben-Ari et al. (1989) showed that compared to routine physician care, monitored CR programs provided patients with lower cholesterol and LDLs and higher physical work capacity, HDLs, and ejection fractions. Despite this information, present practice does not reflect support of CR programs.

Arkansas physicians were found to underutilize CR programs in a study done by Suter, Bona, & Suter (1992). Out of a potential CR patient population of 5595, only

716 patients enrolled in CR, a dismal 13% enrollment rate. The enrollment rate is consistent with national data suggesting only 11-20% of eligible patients enroll in CR programs (Wenger et al., 1995). The Arkansas physician's justification for not using CR included a belief that insurance coverage was not available, a belief that patients lacked motivation, and a belief that CR staff were unqualified (Suter, Bona, Suter, 1992).

When physicians did refer their PTCA patients to CR programs, only 19% of the program directors felt physicians did this before the planned PTCA procedure. When referring their patients after the PTCA procedure, 14% of directors felt this was done within 24 hours of the PTCA, with the rest occurring more than 24 hours later. If patients are not referred early to CR programs, opportunities to provide patient education may be missed due to the short hospital stay.

Risk stratification has become a key component when referring all patients for CR programs (Lavie & Milani, 1994). Based on risk factor stratification, the program protocol is assigned. Directors (70%) felt their programs allowed physicians to individualize CR for their patients, while only 19% felt physicians used a standard protocol. Two of the programs individualized the protocol for the patient themselves, and then obtained



physician approval. This collaboration between CR staff and the physician seems the most efficacious for the patient.

Patients. Most patients receive general information on diet and exercise following a coronary event, but they have no idea how to proceed and are often fearful. Tooth & McKenna (1995) felt PTCA patients have special teaching needs because they may be less motivated to change their risk factors due to a perception of being less sick or cured by the procedure. They may also delay their return to work or leisure activities because of perceived limitations.

The review of literature by AHCPR reveals that studies show patients in comprehensive rehabilitation programs are more likely to follow better heart habits for life, while those who try alone often fail (Wenger et al., 1995). Patients were rated as resistant as physicians to receiving CR after a PTCA procedure by 87% of directors. Factors affecting their resistance, such as cost or time, were not addressed by the survey. Program directors (60%) felt insurance companies provided resistance to patients' enrollment. Determining whether their resistance affected patients' resistance to enrollment was not determined. Most insurance companies cover standard CR (Suter, Bona, & Suter, 1992).

The benefits of outpatient CR are realized earlier if Phase I CR is initiated early on. The surveyed programs (84%) saw PTCA patients in Phase II or III CR, while only 52% of them saw PTCA patients without MI in Phase I CR. Fletcher (1986) indicated that PTCA patients enrolled in Phase I CR can make significant changes in their lifestyles, especially in risk factor modification. The knowledge given in the hospital may eliminate the feeling of being cured and motivate the patient to continue the modifications at home. Gaw (1992) reported less than 50% of patients undergoing PTCA seemed to be motivated to make lifestyle changes. The shortened hospital stays for PTCA may account for fewer programs providing Phase I CR.

Angioplasty patients who completed a Phase II CR program improved their rate of return to work, quality of life, and exercise performance in a study done by Ben-Ari et al. (1992). This information may encourage patients to more actively seek enrollment in Phase II CR programs.

Several of the comments received from directors cited a lack of time to teach PTCA patients due to their shorter hospitalizations. Better utilization of Phase I CR programs could eliminate this discrepancy. Somewhere along the care pathway, patients must have received adequate information about CR, since 59% of program

directors felt self referrals identified themselves as enrollees. Patient's family members could also be a source of support to influence PTCA patients to attend CR programs. Family was identified as a resistor by only 7% of program directors.

Ritchie & Sivarajan Froelicher (1995) addressed the appropriate time interval between discharge and the initiation of Phase II CR as one to three weeks. The surveyed programs were following this guideline with directors feeling 58% of patients started their programs within one week, while 35% started within one-to-two weeks. The timing of Phase II CR is an important consideration. Hospital instruction or motivation from their Phase I program, if given, may soon be forgotten. The longer patients wait, the less likely they are to initiate the program. Ben-Ari & Rothbaum (1991) stated most patients resume a normal routine within four-to-five weeks after PTCA.

#### Ways to Change Current Practice

Marketing may be one way to improve participation of PTCA patients in CR. Program directors (74%) indicated they marketed their CR programs to the physicians performing PTCA in their areas. Comments indicated these marketing approaches were not "formalized" and most often occurred via networking and word of mouth. With the poor

referral rates seen in the Arkansas physicians, and the small number of PTCA patients enrolled in CR programs from this study, educating and marketing to physicians seems a plausible solution.

Other individuals do influence physicians referrals. Although the marketing of CR programs to the other individuals identified in the survey who could potentially encourage referral of PTCA patients into CR programs was not specifically addressed. This marketing strategy is something directors may want to address. Capitalizing on the high rates attributed to CR staff for CR patient identification (96%), and their seeing PTCA patients prior to discharge 71% of the time, could improve the referral rates. Program directors also felt nurses (67%), CNSs (33%), and self referrals (59%) identified patients for referral to CR. Better education through a marketing campaign may improve these numbers.

This study indicated low numbers of PTCA patients enroll in CR. Program directors felt physicians (90%) were the most commonly seen alternative to CR programs. Less than 40% indicated the use of home exercise programs, health-promotion programs, CNSs and telephone follow-up, or case managers. Educating nursing staff on the availability of these alternatives and other community resources could enhance their utilization.

### **Limitations of the Study**

The completed study described the experiences CR program directors encountered during the enrollment of PTCA patients who had not had an MI into CR programs. A more complete understanding of the factors affecting the utilization of CR programs by PTCA patients who have not had an MI would have been achieved if physicians and patients were also surveyed at the same time. The data obtained in this study covered a one-year time period during a time of rapid health care change. Obtaining and comparing data from the past two or three years would have presented a more complete picture of CR program practices and provided trends for analysis. Identifying the characteristics of PTCA patients without MI who enroll in CR and comparing them with patients who did not would also have provided useful data.

The study was designed to be purely descriptive. The results obtained only describe the recent experiences of this small sample of program directors. No statistical significance can be applied to the results obtained. Due to the small sample size, generalizability is limited.

A limitation identified by this study is the lack of certifiable data from CR program records. Only 40% of the program directors could provide certifiable data.

This highlights the need for better record keeping in CR programs. More complete results may have been achieved if the investigator had performed the record review for each individual program.

### **Recommendations for Future Research**

From this study, it is evident small numbers of PTCA patients without MI are seen in CR programs. The design of a survey to elicit factors influencing patients' decisions and physicians' decisions to enroll patients in CR programs would add to the impact of the present survey. Patients identification of attributes in a CR program that encouraged them to enroll and identification of the barriers to physician referrals would guide future practice changes.

Research of the timing of patient education in the PTCA process would be helpful. Since time is limited for instructing PTCA patients, due to shorter hospital stays in this group, a study looking at risk-factor modification instructions prior to the PTCA procedure in scheduled cases would allow better understanding of the education process. A comparison of patient's knowledge gained through education sessions offered before PTCA, after PTCA, or following a patient's completion of Phase II CR would allow us to understand when the best time to teach occurs.

A retrospective survey of Phase I CR programs and the subsequent CR enrollment rates of these patients into Phase II or III CR, would provide useful data. Designing an education program to decrease patients' resistance to enrollment followed by implementation of the education program would indicate the program's effectiveness. Enrollment rates following the program's implementation would be tracked. The educational program may prove useful in delineating the characteristics of resistant patients.

Some physicians remain resistant to the enrollment of their patients into CR. Designing a targeted education program concerning the benefit of CR following PTCA may alleviate the resistance. Identifying the physician referral rates before the education program and one year after instruction would indicate the benefit of such a program. Determining whether the referrals were made before or after the scheduled PTCA procedures would also indicate the physician's comprehension of the importance of CR.

Most directors from this survey indicated they marketed their programs to physicians performing PTCA (60%). A study evaluating effective marketing techniques in successful CR programs is needed. Marketing techniques used on other individuals influencing CR

patient referral and its effectiveness is also indicated.

### **Implications for Nursing**

The results of this study revealed many implications for nursing practice. Along with physicians, many patients remained resistant to enrolling in CR programs. The initiation of patient instruction prior to planned PTCAs may encourage patients to continue on in Phase II CR or at least understand the implications of CAD in relation to PTCA. Shortened hospital stays for PTCA patients require nurses to more quickly identify the need for patient instruction and initiate discharge planning to alleviate this resistance. Quicker referral to Phase I CR programs is important, so the CR staff can implement instruction sooner. Evaluating patient's comprehension of material is included in the instruction process, and is also an important part of the nursing process.

For hospitals treating patients with PTCA and not having CR programs available for referral, nurses can make a valuable contribution by recognizing available community resources and referring both physician and patients to these resources. Implementing a telephone follow-up program with patients would allow nurses to provide reinforcement of the education given and provide feedback on patients' progress.



Program directors viewed nurses as strong identifiers of patients for CR. Collaborating with the physicians involved in PTCA patients care to refer patients into CR advances our role as patient advocates. Nurses were not seen as resistors to the enrollment of PTCA patients. We play a role in decreasing the physicians and patients resistance through education and collaboration.

Tooth & McKenna (1995) felt PTCA patients may not require the full 12-week CR program. Nurses involved in CR programs are on the forefront for initiating changes in their programs' protocols for these patients. A shortened version may encourage more of these patients to attend.

In todays managed care society, CR has been proven to be a cost-effective measure for CAD patients. Hospital readmissions are often reduced due to the preventive nature of improved exercise tolerance and cardiac risk-factor modifications gained from CR programs. Better documentation of patient education provided to PTCA patients, and PTCA patients successful enrollment in and completion of CR will provide the data necessary to validate these claims. The value of sharing practices that work for PTCA patients among caregivers ensures the patient is the winner.

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APPENDIX A. Questionnaire for Experiences of Program  
Directors Enrolling Patients who have had  
PTCA without MI

The purpose of this questionnaire is to obtain data regarding the experiences of your program when enrolling patients who have had PTCA who have not experienced an MI. Data from CR program directors in the Northwest will be combined to provide a comprehensive description of experiences programs encounter when enrolling patients who had PTCA without MI.

PLEASE CIRCLE THE NUMBER PRECEDING YOUR RESPONSE TO EACH QUESTION. PROVIDE ONLY ONE ANSWER TO EACH QUESTION UNLESS OTHERWISE INDICATED.

1. Are PTCA patients, without MI, seen in your Phase I cardiac rehabilitation program?
  1. YES
  2. NO
2. Are PTCA patients, without MI, seen in your Phase II or Phase III cardiac rehabilitation program?

1. YES
2. NO

If NO, please proceed to question # 13.

3. Are PTCA patients, without MI, seen by a cardiac rehabilitation staff member prior to discharge from the hospital?
  1. YES
  2. NO
4. Who identifies patients as potential candidates for a Phase II or Phase III cardiac rehabilitation program? Check all that apply.

- |  |     |    |
|--|-----|----|
| 1. STAFF NURSE                         | YES | NO |
| 2. PHYSICIAN                           | YES | NO |
| 3. CLINICAL NURSE SPECIALIST           | YES | NO |
| 4. CARDIAC REHABILITATION STAFF MEMBER | YES | NO |
| 5. SELF REFERRAL                       | YES | NO |
| 6. OTHER _____                         |     |    |

5. Do physicians refer patients undergoing an elective PTCA to the cardiac rehabilitation Phase II or Phase III program prior to the procedure?

1. YES
2. NO

If NO, how long after the procedure is your program contacted?

1. LESS THAN OR EQUAL TO 24 HOURS
2. GREATER THAN 24 HOURS

6. Does your program/staff encounter resistance in getting PTCA patients, without MI, enrolled into Phase II or Phase III cardiac rehabilitation?

1. YES
2. NO

If YES, from whom do you encounter the resistance?  
Check all that apply.

- |                      |     |    |
|----------------------|-----|----|
| 1. PATIENTS          | YES | NO |
| 2. PHYSICIANS        | YES | NO |
| 3. NURSING STAFF     | YES | NO |
| 4. FAMILY MEMBERS    | YES | NO |
| 5. INSURANCE COMPANY | YES | NO |
| 6. OTHER _____       |     |    |

7. Are physicians who refer PTCA patients able to individualize the program for their patients or must they choose a standard protocol?

1. INDIVIDUALIZE TO PATIENTS
2. STANDARD PROTOCOL
3. OTHER \_\_\_\_\_

8. Do you market your Phase II or Phase III cardiac rehabilitation program to physicians who perform PTCA in your area?

1. YES
2. NO

Please explain how and/or why you do or do not market your program?

9. Are the criteria to enroll PTCA patients into a Phase II or Phase III cardiac rehabilitation program different from the criteria used to enroll MI or CABG patients?

1. YES
2. NO

If YES, please explain how the criteria differ.

10. How soon after hospital discharge do PTCA patients begin Phase II or Phase III cardiac rehabilitation?

1. ONE WEEK OR LESS
2. GREATER THAN ONE WEEK BUT LESS THAN TWO WEEKS
3. GREATER THAN TWO WEEKS BUT LESS THAN FOUR WEEKS
4. GREATER THAN OR EQUAL TO FOUR WEEKS
5. OTHER \_\_\_\_\_

11. How many patients were already enrolled in Phase II or Phase III cardiac rehabilitation when they had their PTCA?

Of those patients who had already been enrolled prior to their PTCA, how many continued in the Phase II or Phase III program after the procedure?

12. Of the PTCA patients enrolling in Phase II or Phase III cardiac rehabilitation, what percentage have had their:

1st PTCA \_\_\_\_\_  
2nd PTCA \_\_\_\_\_  
3rd PTCA \_\_\_\_\_

13. What post-hospital care options are available for PTCA patients who choose not to attend or do not have a Phase II or Phase III cardiac rehabilitation program available?

- |                             |           |          |
|-----------------------------|-----------|----------|
| 1. PHYSICIAN FOLLOW UP      | YES _____ | NO _____ |
| 2. HEALTH PROMOTION PROGRAM | YES _____ | NO _____ |
| 3. CASE MANAGER             | YES _____ | NO _____ |



4. TELEPHONE FOLLOW UP WITH A CLINICAL NURSE  
SPECIALIST YES\_\_\_ NO\_\_\_
5. HOME EXERCISE PROGRAM WITH FOLLOW-UP PHONE CALLS  
OR FOLLOW-UP VISITS YES\_\_\_ NO\_\_\_
6. OTHER\_\_\_\_\_ YES\_\_\_ NO\_\_\_

Please answer the following questions concerning characteristics of your program.

14. How many PTCA procedures were done at the hospital or hospitals you serve in 1994?

Are these data certified or are they an estimate?

15. How many Phase II and Phase III cardiac rehabilitation patients attended your program in 1994?
16. How many cardiac rehabilitation patients attending your Phase II or Phase III cardiac rehabilitation program were PTCA patients, without MI, in 1994?
17. What year did you start accepting PTCA patients into your  
Phase II and Phase III cardiac rehabilitation program?
18. How long has your cardiac rehabilitation program been operating?
19. How long have you been a cardiac rehabilitation professional?

Are there any other characteristics about your program that you feel are important to a complete understanding of cardiac rehabilitation in PTCA patients who have not had an MI? Please make any comments you may have on the back of this page. Thank you for your time and sharing your experiences!

APPENDIX B. Cover Letter for Cardiac Rehabilitation  
Experts

1 Sept 95

School of Nursing  
Department of Physiological Nursing  
University of Washington  
Seattle, Washington 98195

Dear Cardiac Rehabilitation Professional,

I am a graduate student in the Department of Physiological Nursing at the University of Washington. I am in the Critical Care/Cardiovascular pathway. The purpose of my thesis is to describe the experiences cardiac rehabilitation program directors encounter during the enrollment of patients who had PTCA without myocardial infarction into their programs.

I am presently determining content validity of the enclosed questionnaire. The expertise you possess in the field of cardiac rehabilitation is required for the validation process. If you are willing to participate in this process, I ask that you complete the enclosed rating form for the proposed questionnaire. Please rate each question numerically and write comments if necessary. A self-addressed, stamped envelope is enclosed for your convenience. I would appreciate your participation.

If you would like to receive the results of the final study, please let me know. Your time and participation in my thesis preparation are deeply appreciated. If you have any questions, I can be contacted through the Department of Physiological Nursing at 206-543-8650.

Sincerely yours,

Maureen A. Koch, BSN, RN, CCRN  
Graduate Student  
University of Washington

I certify that Maureen Koch is a graduate student enrolled in the School of Nursing at the University of Washington.

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Dr. Susanna Cunningham, Supervisory Committee Chairperson

# APPENDIX C. Questionnaire Evaluation Form

As you read the questionnaire, please rate each of the questions for clarity and relevancy. Use the following rating system:

## CLARITY

1=very clear  
2=fairly clear  
3=unclear

## RELEVANCE

1=relevant  
2=not relevant

Please circle the number that best corresponds with your evaluation of the question. Any additional comments that you would like to make about any question or response alternatives are welcomed. Please comment on the questions where appropriate.

<u>Question #</u> <u>COMMENTS</u>	<u>CLARITY</u>	<u>RELEVANCE</u>
1.	1 2 3	1 2
2.	1 2 3	1 2
3.	1 2 3	1 2
4.	1 2 3	1 2
5.	1 2 3	1 2
6.	1 2 3	1 2
7.	1 2 3	1 2
8.	1 2 3	1 2
9.	1 2 3	1 2
10.	1 2 3	1 2
11.	1 2 3	1 2
12.	1 2 3	1 2
13.	1 2 3	1 2
14.	1 2 3	1 2
15.	1 2 3	1 2
16.	1 2 3	1 2

<u>Question #</u> <u>COMMENTS</u>	<u>CLARITY</u>	<u>RELEVANCE</u>
17.	1 2 3	1 2
18.	1 2 3	1 2
19.	1 2 3	1 2

Are there any questions you feel should be added?

APPENDIX D. Cover Letter to Questionnaire Participants

School of Nursing  
Department of Physiological Nursing  
University of Washington  
Seattle, Washington 98195

Dear Program Director:

I am a graduate student in the Department of Physiological Nursing at the University of Washington. In partial fulfillment of the requirements for my Master's degree, I am surveying cardiac rehabilitation programs in the Northwest regarding the type of practices they encounter in the referral of PTCA patients. The purpose of this study is to describe the experiences encountered by cardiac rehabilitation program directors during the enrollment of patients who had PTCA without myocardial infarction into their programs.

You were chosen as a participant in this study because your program is listed in the Northwest Cardiovascular and Pulmonary Rehabilitation Membership List. The questionnaire should take about 20-30 minutes to complete. If you are not part of the referral and enrollment process, please consult those responsible to ensure accurate answers to the questions are provided.

A stamped, addressed envelope has been provided for you to return the survey. Please return the survey by July 30, 1995. Results of the study will be provided upon request. To assure anonymity, a separate postcard has been enclosed for you to request the results of the study. Please mail this postcard separate from the questionnaire. A copy of the results will be available in the University of Washington libraries. Participation in this study is voluntary. Consent to participate is implied by your return of the completed survey.

A reminder postcard will be mailed two weeks after the original mailing. Please ignore this reminder if you have already returned the questionnaire.

Thank you for your time and participation in this study. If you have any questions, you may contact the investigator through the Department of Physiological Nursing, University of Washington (Phone (206) 543-8650).

Sincerely yours,

Maureen A. Koch, BSN, RN, CCRN  
Graduate Student/University of Washington

I certify that Maureen Koch is a graduate student  
enrolled in the School of Nursing at the University of  
Washington.

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Dr. Susanna Cunningham, Supervisory Committee Chairperson

APPENDIX E. Reminder Postcard to Potential Participants

Three weeks ago a questionnaire about the experiences program directors encounter during the enrollment of patients who had PTCA without MI was mailed to you. Your name was obtained from the Northwest Association of Cardiovascular and Pulmonary Rehabilitation membership list.

Please accept my sincere thanks if you have already completed and returned the questionnaire to me. If not, please take the time to complete the questionnaire this week. The questionnaire has been sent to only a small sample of program directors. Therefore, it is extremely important that your response be included in the study if the results are to accurately represent the experiences of program directors in the Northwest.

If you did not receive the questionnaire, or it has been misplaced, please call me collect at 206-787-9514 and I will send you another one.

Sincerely,

Maureen Koch, RN, BSN  
Graduate Student  
University of Washington



APPENDIX F. Postcard for Participants to Request Results

Study Results

I was a participant in your study describing the experiences cardiac rehabilitation program directors had during the enrollment of patients who had PTCA without MI. I am interested in receiving the study results.

Please mail the results to:

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